PROJECT MANUAL

For:

TIM EMERY MUNICIPAL POOL INTERIM REPAIRS RESTORATIO

Bucksport, Maine

Prepared for:

Town of Bucksport
Bucksport, ME 04416

Prepared By:

Bargmann Hendrie + Archetype, Inc.
Boston, MA

May 18, 2020

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

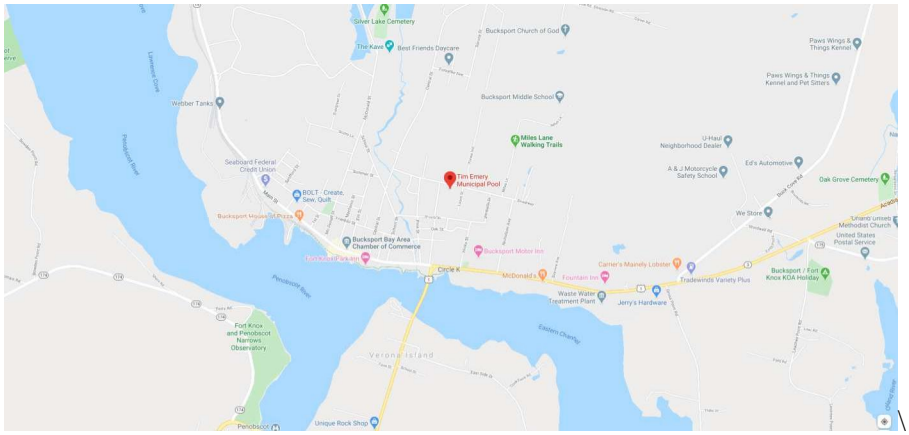
A. Section Includes:
1. Project information.
2. Work covered by Contract Documents.
3. Future work not part of this Project.
4. Contractor's use of site and premises.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and Drawing conventions.
8. Miscellaneous provisions.

B. Related Requirements:

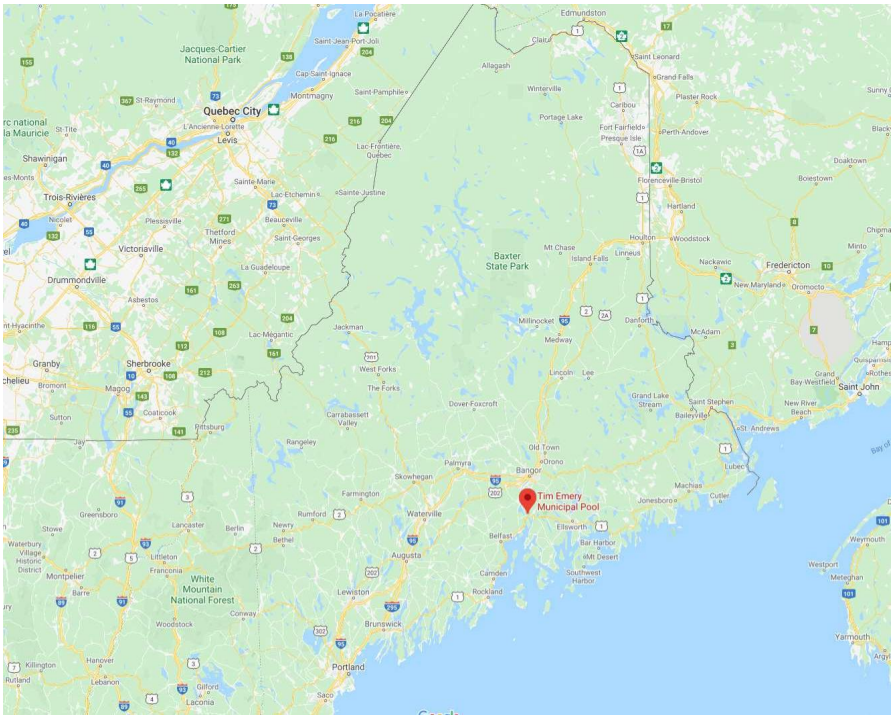
1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: Tim Emery Municipal Swimming Pool Interim Repairs
1. Project Location: 55 Broadway, Bucksport, ME 04416

2. 

Map Credit: Google

3. 

Map Credit: Google

B. Owner: Town of Bucksport Maine, 50 Main Street P.O. Box X, Bucksport, Maine 04416
   1. Town Manager: Susan Lessard, Town Manager (207) 469-7368
   2. Town Representative: Bucksport Pool Committee
   3. Pool Operator: Down East Family YMCA. Peter Farragher, Director 207-667-3086 ext. 221

C. Architect: Bargmann Hendrie + Archetype, Inc., 9 Channel Center Street, Suite 300, Boston, MA.

   1. Architect's Representative: Tom Scarlata, Principal, CSI, CCS, CCCA, AIA
      a. Phone: 617-456-2222 Cellphone 508-662-8406
      b. Email: tscarlata@bhplus.com

D. Architect's Consultants: Architect has retained the following design professionals, who will assist and provide Construction Contract Administration during the Work.
   1. Carpenter Associates, Old Town, Maine

1.4 INTENT

A. The Interim Repair Project is intended to perform basic testing, repairs, and improvements to allow pool usage for the 2020 summer swim season. Portions of the Work are permanent improvements that will be incorporated into a larger project tentatively scheduled to start at the end of the 2020 swim season.

1.5 SCOPE OF WORK

A. The interim repairs include, but are not limited to, the following:
   1. Removal of concrete deck
   2. Excavation and stockpiling of fill to expose main drain piping
   3. Sealant at perimeter of all drains and filter water supply inlets
   4. Provide plugs in existing main drain
   5. Expose and document winter drain down by-pass valve on existing main drain line.
   6. Repairs to concrete pool wall
   7. Painting of repaired areas

B. Interim Work that will be part of the future pool project:
   1. Main drains
   2. Main drain connections to surge tank
   3. Diversion drain from main drains to existing winter overflow pipe
   4. Backfill
   5. New accessible handrails
   6. Servicing pool pump

C. Type of Contract: Project will be constructed under a single prime contract.

1.6 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:

   1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
   2. Provide for delivery of Owner-furnished products to Project site.
   3. Upon delivery, inspect, with Contractor present, delivered items.

      a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.

   4. Obtain manufacturer's inspections, service, and warranties.
   5. Inform Contractor of earliest available delivery date for Owner-furnished products.

B. Contractor's Responsibilities: The Work includes the following, as applicable:

   1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
   2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
   3. Receive, unload, handle, store, protect, and install Owner-furnished products.
   4. Make building services connections for Owner-furnished products.
   5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
   6. Repair or replace Owner-furnished products damaged following receipt.

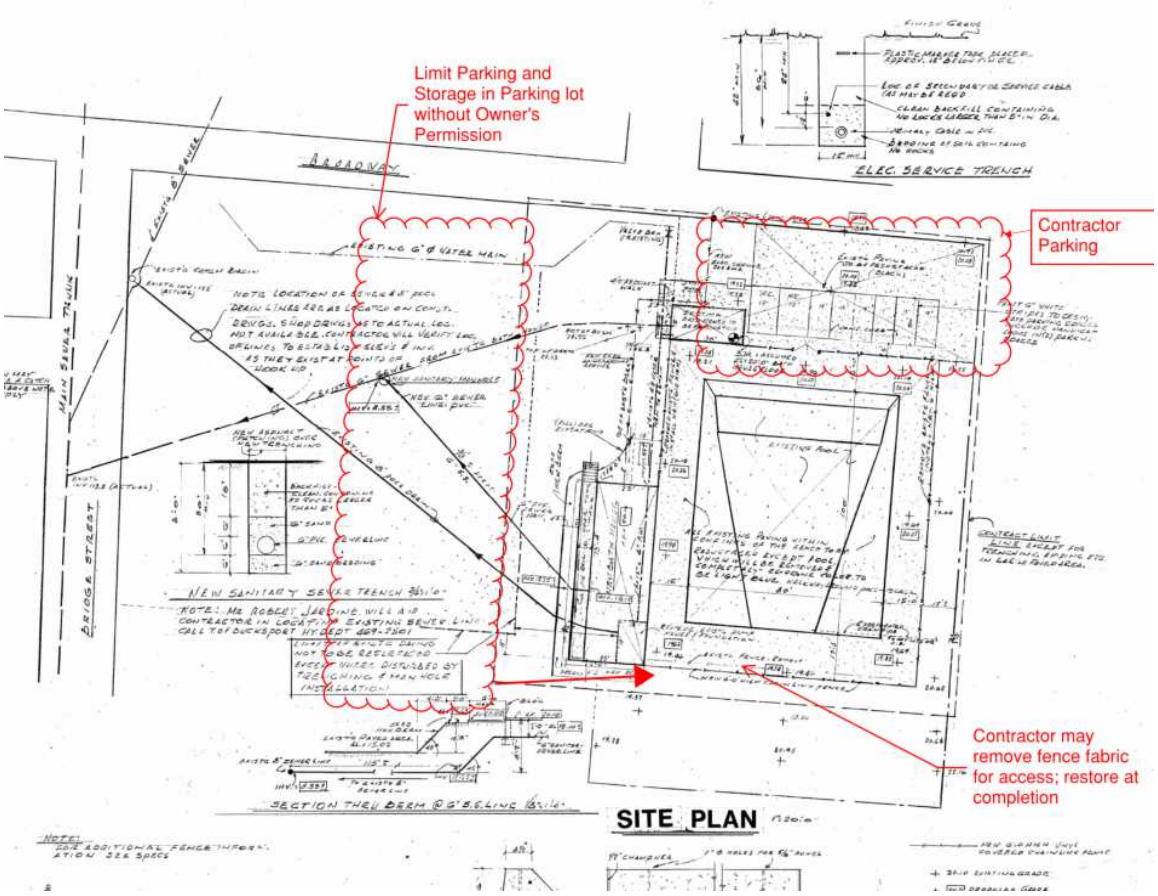
1.7 OWNER-FURNISHED/OWNER-INSTALLED (OFOI) PRODUCTS

A. The Owner will provide all life safety equipment, signage, test kits, and chemicals required to open the swimming pool for public use.

1.8 CONTRACTOR'S USE OF SITE AND PREMISES

A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B.



C. Limits on Use of Site: Limit use of Project site to **Work in areas** and **areas within the limits shown above.** indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

E. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.9 COORDINATION WITH OCCUPANTS

A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1.10 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction and ordinances of the Town of Bucksport.

B. On-Site Work Hours: Limit work to between 7 a.m. to 3 p.m., Monday through Friday, unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.

   1. Weekend Hours: As approved by Owner and Town authorities
   2. Early Morning Hours: As approved by Owner and Town authorities

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products**, alcoholic beverages,** and other controlled substances **is** not permitted on the Project site.

1.11 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
   3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
   4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Administrative and supervisory personnel.
   2. Project meetings.
   3. Requests for Interpretation (RFIs).

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
   1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
   2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
   3. Make adequate provisions to accommodate items scheduled for later installation.
   4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.5 SUBMITTALS

A. Key Personnel Names: Within five (5) days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.7 PROJECT MEETINGS

A. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 5 working days after issuance of a Notice to Proceed by the Owner. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
   1. Agenda: Discuss items of significance that could affect progress, including the following:
      a. Tentative construction schedule.
      b. Designation of key personnel and their duties.
      c. Procedures for processing field decisions and Change Orders.
      d. Procedures for RFIs.
      e. Procedures for processing Applications for Payment.
      f. Distribution of the Contract Documents.
      g. Submittal procedures.
      h. Preparation of Record Documents.
      i. Use of the premises and existing building.
      j. Work restrictions.
      k. Responsibility for temporary facilities and controls.
      l. Parking availability.
      m. Office, work, and storage areas.
      n. Security.
      o. Progress cleaning.
      p. Working hours.

2. Minutes: Architect will Record and distribute meeting minutes.

B. Job Progress Meetings: Conduct progress meetings at intervals appropriate to construction activities but no more than a weekly interval. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
3. Minutes: Architect will Record and distribute meeting minutes.

1.8 REQUESTS FOR INTERPRETATION (RFIs)

A. Purpose: After execution of the Contract, the Contractor shall issue written Requests for Information (RFI's) to the Architect. The Contractor issues and RFI to inquire about an item of work insufficiently described or detailed in the Contract Documents and seeks an interpretation.

B. RFI Format: Contractor shall use an RFI form acceptable to the Architect. An example RFI form has been included at the end of this Section.

C. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
   1. work or work of subcontractors.
   2. ALL RFI’S BE SUBMITTED TO THE ARCHITECT VIA EMAIL TO ENSURE PROMPT DELIVERY AND RESPONSE.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.

1.3 SUBMITTALS

A. Contractor's As-Planned Construction Schedule: Submit PDF copies of initial schedule, large enough to show entire schedule for entire construction period.

1.4 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

PART 2 - PRODUCTS

2.1 CONTRACTOR'S AS-PLANNED CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven days of date established for commencement of the Work.
   1. The schedule can be in the form of an “Excel” spreadsheet, or neatly prepared calendar mark-ups or graphs.
   2. A schedule generated from construction scheduling software is not required.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

PART 3 - EXECUTION

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule at regularly scheduled progress meeting. Approval of Applications for Payment are subject to satisfactory maintenance and submission of the project schedule.

END OF SECTION 013200

SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for the following:
   1. Preconstruction photographs
   2. Periodic construction photographs.

1.3 INTENT OF PRECONSTRUCTION PHOTOGRAPHS

A. Provisions for preconstruction documentation contained in this Section are intended to provide visual documentation of the existing conditions at the Project Site prior to the start of Work. Documentation shall show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by construction operations. The documentation shall be submitted, acknowledged by the Contractor and Owner as the condition the existing structure prior to construction, and used in the event that a claim for damage of the facility outside of the contract limits is made during the course of the work.

B. Use of a professional photographer **is not required**. Photographs taken by the Contractor, that are clear, in-focus, and properly illuminated are acceptable.

1.4 SUBMITTALS

A. Pre-Construction Photographs: Submit 2 prints of each photographic view within seven days of taking photographs.
   1. Format: j-peg files organized on a thumb drive.
   2. Sort into Folders and label locations of photos
   3. Date folder

B. Construction Photographs: Same format as Pre-construction photographs

1.5 USAGE RIGHTS

A. Contractor shall provide Owner and Architect copyright usage rights for unlimited reproduction of photographic documentation related to the project.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

B. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

C. Periodic Construction Photographs: Take photographs weekly during the construction. Photographs should document the progress of the work.

D. Photographs of all buried piping and subsurface conditions shall be taken to record piping layout, locations and configurations.

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's responsive action.

B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. Architect shall return submittals within 5 calendar days.

D. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect shall return submittals received from sources other than Contractor.
   1. SUBMITTALS SHALL BE TRANSMITTED VIA EMAIL IN PDF FORMAT IN ORDER TO ENSURE TIMELY REVIEW AND RETURN.

E. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

PART 2 - PRODUCTS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Progress Schedule (BAR CHART FORMAT)."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Pre-Construction Photographs : Comply with requirements in Division 1 Section "Construction Progress Documentation."

E. Material Safety Data Sheets: Submit information directly to Owner. If submitted to Architect, Architect will not review this information but will return it with no action taken.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Owner's Project Managers.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it.

C. Informational Submittals: Architect and Owner's Project Managers will review each submittal and will not return it, or will reject and return it if it does not comply with requirements.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 013300

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES

A. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

B. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.
   1. Additional power for equipment not available at the site, shall be provided by the Contractor.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Field Offices, General: A field office for construction is not required. Owner will provide a location within one of the existing building to be used as a temporary field office.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated, with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

D. Telephone Service: Contractor shall provide cellular phones for site personnel.

E. Digital Camera: Contractor shall have the ability to take digital photographs on site and transfer the photographs by text or email to the architect.

3.3 SUPPORT FACILITIES INSTALLATION

A. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations.

B. It is the intent of this section to comply with all Maine Department of Environmental Protection Waste Management Rules and Regulations.

C. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways.

D. Site Enclosure Fence: Existing fence shall be used to secure the site; provide two padlocks and chain at access gates. Provide second padlock key to Town for access.
   1. Where sections of existing fence are removed for construction access, provide temporary fencing to ensure site is secure.
   2. Restore existing fence at completion of the Work.

E. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

END OF SECTION 015000

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SECTION 017300 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. General installation of products.
   2. Progress cleaning.
   3. Protection of installed construction.
   4. Correction of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to **local utility** that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.

F. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

G. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

H. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.6 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017300

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SECTION 017329 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size

required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete & Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
5. Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.
3. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 017329

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SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

1.3 SUBSTANTIAL COMPLETION- PROCEDURES

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
3. Prepare and submit Project Record Documents, maintenance manuals and similar final record information.
4. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
5. Complete startup testing of systems.
6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
7. Complete final cleaning requirements, including touchup painting.
8. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report and warranty.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
f. Sweep concrete floors broom clean in unoccupied spaces.
g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
h. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
i. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 017700

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SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record Product Data.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Initial Submittal:
      a. Submit one paper-copy set(s) of marked-up record prints.
      b. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
   2. Final Submittal:
      a. Submit One paper-copy set(s) of marked-up record prints.
      b. Submit PDF electronic files of scanned record prints and one (1) set of prints.
      c. Print each drawing, whether or not changes and additional information were recorded.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Accurately record information in an acceptable drawing technique.
      c. Record data as soon as possible after obtaining it.

d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding archive photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:

a. Dimensional changes to Drawings.
b. Revisions to details shown on Drawings.
c. Locations and depths of underground utilities.
d. Revisions to routing of piping and conduits.
e. Actual equipment locations.
f. Changes made by Change Order or Construction Change Directive.
g. Changes made following Architect's written orders.
h. Details not on the original Contract Drawings.
i. Field records for variable and concealed conditions.
j. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

B. Format: Submit record Product Data as scanned PDF electronic file(s) of marked-up paper copy of Product Data.

1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; *do not wait until the end of Project.*

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017839

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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of pool filter, pool, deck or site element.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

1.5 INFORMATIONAL SUBMITTALS

A. Predemolition Photographs or Video: Submit before Work begins.

1.6 FIELD CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.

PART 2 - PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review record documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in record documents.

C. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated.

B. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

C. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, then remove concrete between saw cuts.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill]

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 03 01 30 - CONCRETE REPAIRS- POOL REPAIRS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Description of Work: Repairs of concrete pool tank at removed elements, cracks, and surface spall.

B. Repairs to bituminous concrete pool bottom.

C. Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following vertical and horizontal repairs to spalls and cracks in cast-in-place structural concrete:
   1. Sawcut neat joints to define limit of repairs.
   2. Removal of deteriorated concrete and debris.
   3. Treatment of deteriorated and/or corroded reinforcing steel.
   4. Preparation of surfaces to receiving patching compound.
   5. Repairs to spalled, delaminated and scaled areas of concrete.
   6. Finishing and curing of patches.
   7. Removal from site of concrete debris resulting from the work.
   8. Incidental work required to perform the repairs.

D. Water stop material between existing and new material.

E. Refer to photograph at end of this section for condition and repairs concrete

1.3 REFERENCES

A. Except as shown or specified, the Work of this Section shall conform to the requirements of International Concrete Repair Institute (ICRI).
   1. ICRI Guideline No. 03730 Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion.

1.4 PROJECT CONDITIONS

A. Repairs for either cracks or spalls shall not be undertaken if the ambient temperature exceeds 86 degrees F (30 degrees C) or drops below 40 degrees F (10 degrees C), or is forecast within 48 hours after completion of work.

B. Repairs shall not be undertaken in the rain, or if rain is predicted to occur during the repairs. In the event of unexpected precipitation, work shall cease and all uncured material shall be adequately protected with an impermeable polyethylene sheet.

C. Protect persons, vehicles, building site and surrounding buildings from injury resulting from concrete restoration work.

1.5 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated. Submit manufacturer's technical bulletins, test reports and MSDS on each product.

B. Design Mixes: For each concrete patching mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

C. Quality Control Submittals: Provide protection plan of surrounding areas and non-cementitious surfaces.

1.6 QUALITY ASSURANCE

A. Source of Materials: Obtain materials for patching, and crack repair from a single source manufacturer to ensure match quality, color, texture and detailing.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

B. Deliver and store restoration material in manufacturer's original, unopened containers with the grade, batch and production data shown on the container or packaging.

C. Protect restoration materials during storage and construction from wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials.

D. Protect materials from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

E. Comply with the manufacturer's written specifications and recommendations for mixing, application, and curing of grouts and patching materials.

PART 2 - PRODUCTS

2.1 SURFACE PREPARATION FOR PATCHING MATERIAL

A. General: If recommended by specific manufacturer as part of a proprietary system, provide an aqueous blend of inorganic polymers and an organic penetrating aid which will chemically and permanently strengthen existing surfaces.

B. Product: Conpro-Start, or equal.

C. General Physical Properties: The preparation product shall meet or exceed the following performance standards:
   1. Compressive Strength gain on existing concrete which ranges in strength from 5400 PSI to 6500 PSI.

D. Mixing General: No additives of any kind such as rapid binders, antifreeze, accelerators, fillers, pigments, etc., shall be added, except small amounts of potable water as directed on manufacturer's package labels.

E. Mixing: Mix until homogenous.

2.2 TROWEL-APPLIED MORTAR CONSTITUENTS

A. All materials used for spall repairs shall be manufactured and supplied by the same source, to ensure comparability of products.

B. No colorants, accelerators, bonding agents or other additives shall be added to patching compounds without express written direction of manufacturer.

C. Structural repair mortar designed for repairing concrete structures, consisting of one or two-component, acrylic-polymer modified blend of Portland cement and specially-graded aggregates and admixtures designed for low-shrinkage, low stress cure and compatibility with host concrete.

D. Required Properties of Patching Compound:
   1. Compressive strength shall not exceed 500 psi above the existing concrete's compressive strength, as measured by ASTM C-109.
   2. Tensile strength shall develop a minimum of 200 psi direct tensile adhesion with host substrate, when applied in accordance with these Specifications.
   3. Flexural modulus shall be less than 1.0×10^6 psi.
   4. Vapor-permeable, with minimum permeance of 8 perms at ½" depth as measured by ASTM E-96.
   5. Drying Shrinkage shall be less than 0.05%

E. For exposed surfaces mortar shall match the appearance of the existing substrate.

2.3 SURFACE PREPARATION FOR PATCHING MATERIAL WITH EXPOSED REINFORCING OR EMBEDDED FERROUS METAL

A. General: A single component, water based barrier designed to protect metal embedded in concrete by actively inhibiting corrosion.

B. Product: Conproco ECB, or equal

C. Mixing: Follow manufacturer's written mixing instructions.

D. Coverage: 120 square feet per 60 oz. container.

2.4 VERTICAL AND OVERHEAD PATCHING MATERIAL (CONCRETE SUBSTRATE)

A. General: A one part polymer modified, high-strength Portland cement patching compound. Patch shall be capable of installation from 0 to 6 inches.

B. Product: Conpro-Set, or equal

C. General Physical Properties: The vertical patching product shall meet or exceed the following performance standards:
1. Compressive Strength (ASTM C -1 09):
7 day 2690 psi
14 day 6800 psi
28 day 7000 psi

D. Mixing General: No additives of any kind such as rapid binders, antifreeze, accelerators, fillers, pigments, etc., shall be added, except small amounts of potable water as directed on manufacturer's package labels. Follow manufacturer's written mixing instructions.

E. Aggregate: Add 3/8 inch pea stone for applications over 1 inch thick, at a rate of 15 lb. of pea stone to each 50 pounds of dry patching material.

2.5 REINFORCING BAR ANTI-CORROSION COATING AND BONDING AGENT

A. Epoxy Resin / Portland Cement Adhesive for Protection of Reinforcing Steel and Bonding: Equal or equivalent to "Armatec 110 EpoCem" as manufactured by the Sika Corporation of Lyndhurst, NJ, or approved equal.

B. At both trowel-applied and pneumatically-applied repair sites reinforcement shall be coated for corrosion protection. Coating shall be three-component water based cementitious epoxy. Splitting tensile strength shall be 540 psi min. at 28 days. Material shall not form a vapor barrier.

C. Acceptable manufacturer: Sika Armatec 110. Alternates may be considered upon submittal of acceptable manufacturer's documentation of equivalent performance.

2.6 SPECIAL FORM MATERIALS

A. Provide special forms to match existing architectural concrete finish on exposed building concrete. Unexposed concrete surfaces may have forms made of wood, metal, or other material, subject to approval of Architect.

B. Form Release Agent: Non-staining and non-emulsifiable type, or equal approved by Designer.

2.7 REINFORCEMENT AND ADHESIVE PRODUCTS

A. Provide stainless steel pins and dowels meeting the requirements of ASTM A276, Type 304/316.

B. Reinforcing steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, galvanized.

C. For anchorage to concrete: Hilti HY150 Adhesive Injection System, as manufactured by the HILTI Corporation of Tulsa, OK or approved equal.

2.8 WATERSTOP AT POOL JOINTS

A. Self-Expanding Rubber Strip Waterstops: Manufactured rectangular or trapezoidal strip, bentonite-free hydrophilic polymer modified chloroprene rubber, for adhesive bonding to concrete, 3/8 by 3/4 inch (10 by 19 mm).

1. Products:

a. Deneef Construction Chemicals; Swellseal.
b. Greenstreak; Hydrotite.
c. Mitsubishi International Corporation; Adeka Ultra Seal.
d. Progress Unlimited, Inc.; Superstop.
e. Or approved equal

2.9 MISCELLANEOUS MATERIALS

A. Non-shrink Grout: Ready-to-use, non-metallic aggregate product requiring only addition of water at job site.
1. Acceptable products include:
a. "Embeco Pre-mixed Grout" by Master Builder's.
b. "Vibro-Foil Ready-Mixed" by W.R. Grace & Co.
c. "Ferrolith G" by Sonneborn Building Products, Inc.
d. Equal approved by Designer.
2. Compressive strength of grout (2-inch x 2-inch cubes) shall not be less than 5,000 psi at 7 days, and 7,500 psi at 28 days.

B. Chemical cleaning agent: Equal or equivalent to Sure Klean 600, as manufactured by PROSOCO (Lawrence, KS).

C. Water: Clean, potable, free from oil, acid, injurious amounts of vegetable matter, alkalis or other salts.

2.10 MATERIALS FOR CRACK REPAIR

A. Inject cracks with 100%-solids, two-component, elastomeric, epoxy with 110% elongation and minimum 1,200 psi tensile strength (ASTM D412).

B. Water: Clean, potable, free from oil, acid, injurious amounts of vegetable matter, alkalis or other salts.

C. All materials used for crack repairs shall be manufactured and supplied by the same source, to ensure comparability of products.

D. Acceptable products for concrete crack repair include:
   1. Edison Flexi-Seal 510, Edison Coatings, Inc., (800) 697-8055, www.edisoncoatings.com.
   2. Level surfaces: CM 2000 Ultra-Low Viscosity, Rapid Curing Polyurea Concrete Repair, Conspec (by Dayton Superior), (888) 977-9600, www.daytonsuperior.com.

2.11 CEMENT GROUT

A. Cement Grout: Portland Cement and fine aggregates; Non-metallic, non-shrink: Grout shall be Sika Grout 212 as manufactured by Sika Corporation or equal. Mixing shall be done in accordance with manufacturers guidelines.

2.12 BITUMINUOUS ASPHALT PATCH

A. Provide Asphalt Cold Patch by Quickrete or approved equal.
   1. Product No. 1701-58

B. Asphalt cleaner recommended by manufacturer; QUIKRETE® Concrete & Asphalt Cleaner (No. 8601) or approved

2.13 MISCELLANEOUS

A. Equipment: Provide all tools, brushes, mixing equipment, and containers required for application of concrete restoration products.

PART 3 - EXECUTION

3.1 DELIVERY HANDLING, STORAGE OF MATERIALS

A. Deliver products in original unopened containers with the manufacturer’s name label, product identification and batch numbers.

B. Store and condition specified product as recommended by the manufacturer.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSPECTION AND SURFACE PREPARATION OF EXISTING REINFORCED CONCRETE TO REMAIN

A. General: All existing concrete surfaces shall be made sound and tight and all patches shall match the dimension and plane of surrounding surfaces. All exposed patches shall also match the finish of surrounding surfaces.

B. Inspection

1. Expose all accessible existing concrete which is to remain without destabilizing the structure. Remove all adhered soil and grease with a bristle brush and low-pressure water clean with a hose and spray head. A surface is considered accessible if it is within a distance of two feet from presently exposed surfaces, or one which is to be exposed under other work of this contract.
2. Perform a visual and manual inspection of all surfaces and exposed reinforcement and note defects. Inspection shall include a visual crack and spall survey and sounding out all surfaces with a mason's hammer. Inspection shall not be performed on concrete that is to be removed.

C. Concrete Surface Reduction and Cleaning.
1. Cut out all honeycombs, spalls, voids and cracks in concrete. Remove all unsound concrete, using lightweight demolition hammers, not to exceed 18 pounds in weight (to limit micro-fractures). All removals to be performed in accordance with ICRI Guideline #03730, which shall be a part of these Specifications. High-pressure (between 1,500 and 2,500 psi) water blast reduced surfaces to remove any remaining spalls and/or soft spots. Adjust water pressure for best results.
2. Saw-cut perimeter of the area to be repaired perpendicular to concrete surface to avoid featheredging and to provide square edges. Create workmanlike, regular-shaped, repair areas. Do not cut existing steel reinforcement
3. Remove concrete from behind exposed reinforcing steel, and high-pressure water blast.
4. Following work, sound the surrounding concrete with either a hammer or steel bar. Repeat previous steps if any remaining spalls and/or soft spots remain.
5. Chemically-clean reduced surfaces and protect from contamination until application of bonding agent and/or overlay.
6. The result of this preparation shall render surfaces clean, i.e., having complete exposure of sound original material without any deposits of contaminants, foreign matter or loose material, which could affect the bond or long-term durability of the surface and the patching compound.

D. Reinforcing Steel Repair and Protection.
1. Where reinforcing steel with active corrosion is encountered, comply with the following:
   a. Abrasive-blast reinforcing steel to remove rust, scale and contaminants to achieve a white metal finish.
   b. If half or greater of the diameter of the reinforcing steel is exposed, chip out behind the reinforcing to a 3/4-inch minimum depth.
2. Identify reinforcing bars which have experienced more than 10 percent section loss and splice with new reinforcing steel of similar size.
3. Verify weldability of existing reinforcing steel and suitability of electrodes in accordance with the requirements ANSI / AWS D1.4-92 if new steel is to be welded to existing, otherwise, lap-splice new steel or mechanically join. All new welded reinforcing steel shall meet ASTM A706.
4. Reinforcing steel which cannot be welded shall be lap-spliced or mechanically connected. Lap splices shall be per the direction of the Engineer but not less than the standard "Class B" full-tension lap splice for a Grade 60 deformed bar in 2,500 psi concrete, and mechanical splices shall develop 125% of the tensile capacity of a Grade 60 bar of the given size.
5. Drill and set added reinforcing into existing concrete using adhesive fastening system. Hole size shall be as required by the manufacturer but shall not be more than 3/16 of an inch greater in diameter than the reinforcing bar. Embedment shall be as noted on the Drawings.

6. Apply coating to steel using stiff bristle brush. Coat all sides of the completely exposed steel. Allow to dry for 2-3 hours at 73 degrees F/50% RH, then apply a second coat at the same coverage rate. Allow to dry again before the repair mortar is applied.
7. When existing longitudinal reinforcement does not intersect repairs greater than 10 lineal feet in the longest direction, a 4-inch x 4 inch low-gauge mesh shall be provided and firmly tied to the properly-prepared substrate. Mesh is not necessary in applications where side restraint exists, such as in square cut patches or where existing reinforcement will provide adequate restraint. Recommended minimum cover of mortar over the mesh is 1 inch.

3.3 APPLICATION OF TROWEL GRADE TWO-COMPONENT POLYMER CEMENTITIOUS TOPPING AND REPAIR MORTAR FOR VERTICAL AND OVERHEAD SURFACES

A. Edge preparation: Saw-cut or chisel cut edges of placements at no less than a 45-degree angle with the adjacent flat surfaces up to which the topping and repair mortar (or concrete) will be feathered.

B. Placement and curing of repair mortar for vertical and overhead surfaces:
1. Mix repair mortar as per manufacturer's instructions, either to be used in original "neat" mortar form.
2. Saturate the substrate with potable water and allow to surface dry. Hand-rub or scrub a paste slurry of the repair material over the substrate, immediately before placement.
3. Trowel the repair mortar in "neat" form up to a maximum placement thickness of 1½ inches. If greater than 1½-inch thickness is needed, build-up in multiple placements, roughening the previous surface to at least a ¼-inch amplitude and allowing to cure overnight. Repeat item #2 of this subsection for the next placement.
4. Moist-cure completed placements per manufacturer's written instructions and strip formwork, following recommended curing period.
5. Surface finish shall match that of the surrounding placement in plane, alignment, and texture to the satisfaction of the Architect.

3.4 BITUMINOUS CONCRETE PATCH

A. Surface Preparation: Square cut the vertical sides of the hole to provide for proper confinement of the patch. Remove all loose material. Sweep the area thoroughly. Sweep area to be filled and remove all loose material. Clean with recommended concrete/asphalt cleaner. QUIKRETE® Concrete & Asphalt Cleaner (No. 8601). Rinse thoroughly with clean water, and then remove standing water (not required). Performance is further improved if surface is dry

3.5 WATERSTOPS

A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.6 CURING AND PROTECTION

A. Mortars shall not be applied when ambient air temperatures are at or below 40 degrees F., or whenever lower temperatures are likely to occur within 48 hours after placement of mortars.

B. Protect repair sites against injury from heat, cold, and defacement of any nature during construction operations.

C. Concrete shall be treated and protected immediately after final finishing is complete. Provide continuous moist curing above 50 degrees F. for at least 7 days by misting and/or application of wet burlap.

D. Curing compounds are not permitted.

3.7 CLEANING

A. Keep area clean during repair operations. Remove and clean promptly, mortar, or epoxy spills, with appropriate tools and solvents, without damaging concrete. Remove debris daily from site.

B. Final Cleaning: Remove all mortar splatter, epoxy spills from the repair area and adjacent structures.

Clean and remove loose material at cracks, sawcut to provide minimum width of 3/16 inch; Provide vertical repair material

Remove all loose and spalled concrete And paint

Trowel apply vertical repair material to Create a smooth surface

Clean and fill all voids with vertical repair Material

END OF SECTION 030130

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes exterior and interior sealants. Work includes, but is not limited to:
   1. Interior and exterior joints in slabs on grade, concrete slabs.
   2. Swimming Pool Joint Sealants

1.3 PERFORMANCE REQUIREMENTS

A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.

1.4 SUBMITTALS

Product Data: For each joint-sealant product indicated.

A. Samples for Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle materials in compliance with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer.
2. When joint substrates are wet.

B. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

C. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

PART 2 - PRODUCTS

2.1 PRODUCTS AND MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified in the sealant schedules at the end of Part 3.

2.2 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2.3 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, of type, size, and density to control sealant depth and otherwise contribute to producing optimum sealant performance recommended by sealant manufacturer.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions.

B. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

3.4 CLEANING

A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from the original work.

3.6 ELASTOMERIC JOINT-SEALANT SCHEDULE

A. Multi-component Urethane Sealant : Where joint sealants of this type are indicated, provide products complying with the following:
   1. Products:
      a. Tremco; THC-901.
      b. Or equal
   2. Type and Grade: M (multicomponent)
   3. Class: 25.
   4. Use Related to Exposure: T (traffic).
   5. Uses Related to Joint Substrates: M, T and, as applicable to joint substrates indicated, O.
   6. Applications: Horizontal joints in interior and exterior slabs on grade.

B. Two-Part High Performance Swimming Pool Sealant : Where joint sealants are indicated within the swimming pool tank, provide products complying with the following:
   1. Products:
      a. Vulkem 45 227
      b. Or equal
   2. Type and Grade: M (multi-component) NS (non-sag)
   3. Approval: USDA approved.
   4. Class: 25.
   5. Use Related to Exposure: NT (non-traffic).
   6. Uses Related to Joint Substrates: NT, M, T A, and, as applicable to joint substrates indicated, O.
   7. Applications: Sealant joints within the swimming pool structure subject to immersion in chlorinated water. .
   8.

END OF SECTION 079200

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SECTION 099900- PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. All scaffolding, staging, hoisting, and rigging required to perform the work.
   2. Painting of existing swimming pool tank.

B. Related Sections:
   1. Section 030130- Concrete Repairs-Pool Repairs for coordination with pool repair materials.

1.3 SUBMITTALS

A. Product Data: For each paint system indicated.

B. Samples for Selection: Paint color chart

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain storage containers in a clean condition, free of foreign materials and residue.

1.6 PROJECT CONDITIONS

A. Weather, Temperature, and Humidity: Perform work only when existing and forecasted weather conditions fall within limits established by manufacturers of materials used.

B. Substrates: Proceed with work only when substrate construction and penetration work is complete.

1.7 EXTRA MATERIALS

A. Furnish a minimum of one gallon of extra paint materials from the same production run as the materials applied unless larger quantities are noted below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Basis of Design to match existing pool paint.
   1. Acceptable Manufacturer: Ramuc Pool Paint®, which is located at: 36 Pine Street; Rockaway, NJ 07866; Toll Free Tel: 800-745-6756; Fax: 800-445-9963; Email:request info (info@ramucpoolpaint.com); Web:www.ramucpoolpaint.com
   2. Ramuc Pool Epoxy:
      a. Product: Epoxy. Durable, high-performance epoxy coatings offering excellent solvent, chemical and abrasion resistance.
         1) Apply to properly prepared surface.
         2) 2:1 mixing ratio of base and activator.
         3) Apply two coats @ 1-2 mils DFT. per coat.

2.2 COLORS

A. Provide color to match existing pool.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

3.2 SURFACE PREPARATION

A. Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.

B. Substrate Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

3.3 SURFACE PREPARATION –POOL TANK

A. Surface Preparation: Waterblast surface to provide a uniform anchor profile equal to #80 - #60 grit sandpaper

3.4 MATERIAL PREPARATION

A. Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

3.5 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

3.6 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

END OF SECTION 099900

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SECTION 13150 - GENERAL PROVISIONS FOR SWIMMING POOL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The Work of this Section includes, but is not limited to, the following:
   1. Tracing and recording existing main drain winter overflow valve and piping.
   2. New main drains and piping.
   3. New valves at main drains including stems and deck level Tee handles
   4. Plugging existing main drains
   5. Servicing existing pool pump and valves.
   6. New accessible rails and anchor sockets

B. Related Sections:
   1. Section 013233- Photographic Documentation for pre-demolition and record photographs of in place pool piping
   2. Section 024119 - Selective Demolition for removal of pool deck, concrete, bituminous and other pool elements.
   3. Section 079200 - Joint Sealants for sealants related to pool repairs and equipment.
   4. Section 099900 – Painting for painting of pool repairs
   5. Section 260000 – Electrical Pool Bonding
   6. Section 312300- Earthwork for excavation and backfill related to pool piping

1.3 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

1.4 QUALITY ASSURANCE

A. The swimming pool subcontractor must normally perform swimming pool construction and maintenance.

B. The Swimming pool Sub-contractor must have at least five (5) years experience in the construction of the type of swimming pool and equipment herein specified.

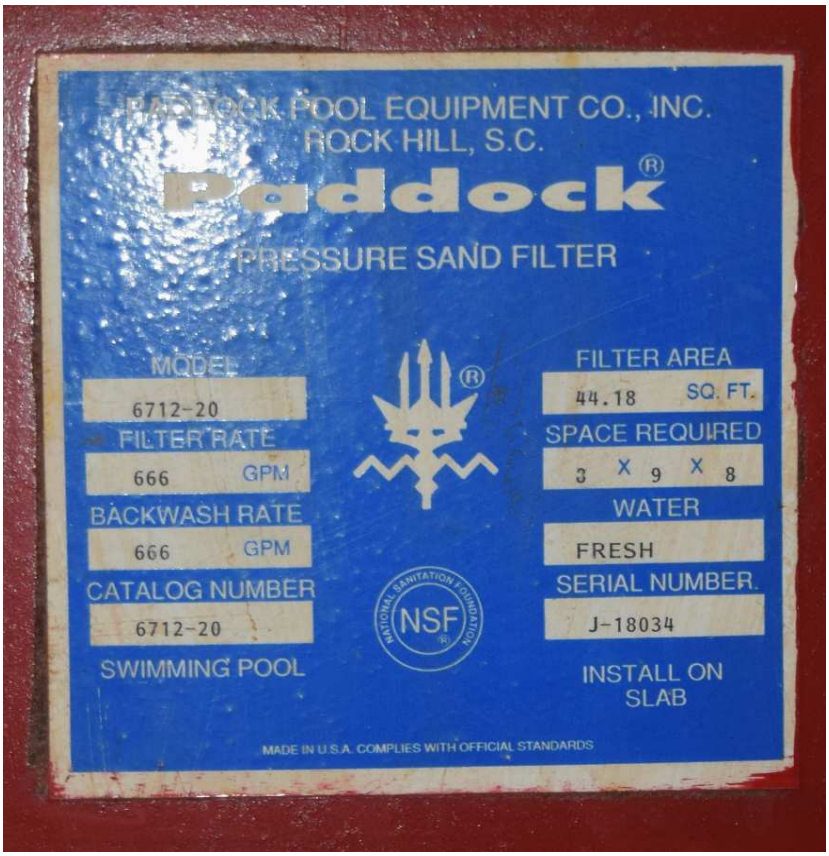
1.5 DAMAGE RESPONSIBILITY

A. The Contractor shall repair at no cost to the Town any damage to the building elements, site appurtenances, landscaping, utilities, etc., caused by the Contractor of his agents during the work of this Contract.

PART 2 - PRODUCTS

2.1 EXISTING POOL FILTER

A. The existing pool filter is a Paddock Pressure Sand Filter with a filter area of 44.18 square feet and a backwash rate of 666 GPM.



2.2 PIPING:

A. Pool Drain Piping: The main drain piping for the pool shall be AWWA Class 22 cement lined mechanical joint cast iron pipe with similar fittings or NSF approved Schedule 80 PVC.

B. Pipe Fittings: Wherever plastic pipe is used, all fitting shall be heavy weight Class 200 , of the same manufacturer as PVC pipe used by the Pool Contractor. Provide hangers or stands where required.

2.3 VALVES

A. Provide butterfly valve for winter diversion valve on main drain line equal to Dominion Valves by Evoqua – Neptune Benson or equal.

B. All valves 3" and larger shall be constructed with cast aluminum ASTM S12A housing and fully coated with Rilsan on all interior and exterior surfaces. Internal components include EPDM resilient lining, Rilsan coated ductile iron disc and T304 stainless steel shaft. Valves shall be rated for 150 psi bubble tight shutoff.

C. Valves shall be Dominion butterfly valves and shall be provided for strainer isolation, filter bypass, backwash throttling, filtered water return and balance tank connections.

D. Valves shall be suitable for chlorinated water, freshwater and submerged applications

E. All below grade, below slab, and all valves within surge pit shall be provided with extension rods to the deck surface. Steel deck access sockets with drop-in covers shall be provided for each extension.
   1. Valves shall be furnished with stainless steel extension rods to deck surface. Stainless steel deck access sockets with drop-in covers shall be provided for each valve extension. Sockets shall be furnished to deck work contractor for installation in concrete stab over surge tank.
   2. Stainless steel T-Handle operator shall be provided.

2.4 SURGE ACCESSORIES

A. At new main drain connection to surge tank provide the following:
   1. Stainless Steel YMCA Style Ball Float Valve:
   2. Float operated modulating valve shall be constructed entirely of stainless steel and designed for submerged service.
      a. The housing body shall be fabricated using Schedule 10 T304L stainless steel with ¼" thick standard flanged ANSI 150# bolt pattern vanstone style back up rings. The body shall include a 45° integral diversion elbow. The internal wafer shall be 12 gauge T304L material and positioned with ¼" (±1/16") opening around the perimeter. The body shall also incorporate exterior stop pins constructed of T304L stainless steel to define the allowable range of arm motion. All hardware shall be stainless steel. Close fitting bushings shall be included on the shaft penetrations of the body to provide a seal against water loss and air entrance.
      b. The valves shaft shall be T304L material 1" diameter of appropriate length to house either one or two float arms. Float arms shall securely fasten to shaft using T304L sliding collars to provide adjustability. Arms shall be T304L ½" thick with length as required. The valve shaft shall have welded stop pins to secure to proper positioning of valve wafer.
      c. Ball floats shall be constructed of T304L stainless steel and be 7" in diameter with internal weighting. Floats shall also be adjustable using sliding collars as previously described.

2.5 MAIN DRAIN SUMPS AND GRATES

A. Provide two new main drain sumps equal to Lawson SuperSump™ or approve equal
   1. Open grate area of 54% - allowing for a maximum flow rate
   2. Internal plumbing fittings
   3. Built-in water stop with two vertical extensions.
   4. A solid one-piece, tapered, injection-molded unit.
   5. Stainless steel screws and brass inserts •
   6. 10-year warranty
   7. Sumps and grates are white.

B. Main drains shall be provided with under drain collector assemblies and hydrostatic relief valves.

C. Grate shall be in tested and in compliance with ANSI/ASME 112.19.82007 (addendum 8a2008) per Section 1404 of the Virginia Graeme Baker Act (VGB) Pool & Spa Safety Act – December 2008.

2.6 EXISTING DRAIN PLUGS

A. Provide mechanical plug equal to Petersen Products Company, Steel Wing Nut Plugs or equal. https://www.petersenproducts.com/143-3-Series-Steel-Wing-Nut-Plugs-s/1899.htm

B. Mechanical pipe plugs
   1. Size: 6-inches
   2. Stainless steel bolt and plate
   3. O-Rings: Nitrile, chemical resistant

2.7 LINK SEALS

A. At pipe to surge tank, provide modular seal by GPT Industries or approved equal. https://www.gptindustries.com/en/downloads/link-seal-modular-seal-technical-data-sheet

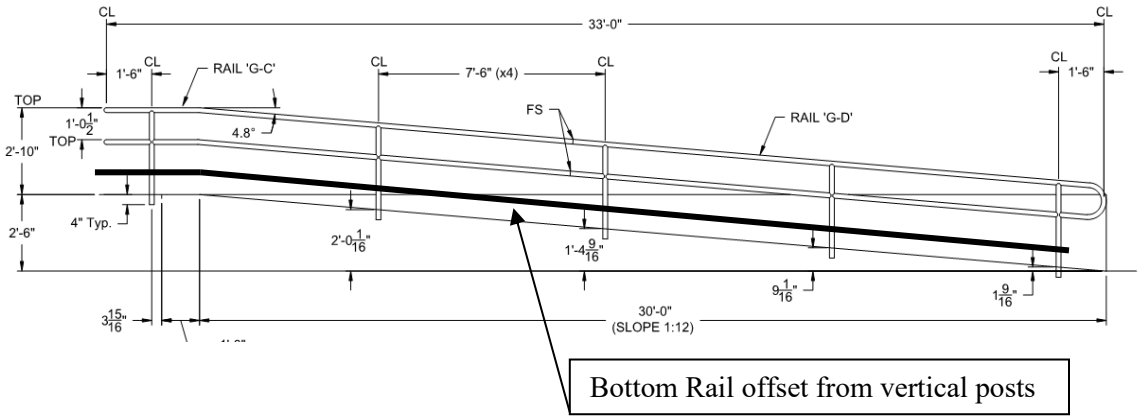
B. Link-Seal Model S-316
   1. Type: Stainless
   2. Seal Elements: Black or Blue EPDM
   3. Pressure Plates: Reinforced Nylon Polymer
   4. Bolts and Nuts: Stainless Steel

2.8 RAILS

A. Custom Fabricated Ramp/Zero Depth Handrails: Provide Custom fabrication, including anchorage, for the HCP Access Ramp Handrails as indicated. Provide
   1. Material: Type 304 polished
   2. Provide custom fabrication.
   3. Pentair 1.90 inch by 0.109 inch wall thickness rails.
   4. Anchorage shall be cast bronze with escutcheon plate.

B. Field verify slopes of floor before fabrication, submit shop drawings for review. Ramps shall slope from zero water depth to 2’-6 inches. Profile of rails are similar to the following:

C.



D. Groute for anchorage sleeve: Super Por-Rok Anchoring Cement by CGM, or approved equal http://cgmbuildingproducts.com/products/super-por-rok/

PART 3 - EXECUTION

3.1 MAIN DRAINS SUMPS AND COVERS

A. Units shall be installed horizontally in the concrete wall. It is the intent of the work to set the drains above the existing to allow the existing to remain and accommodate future work.

B. Sumps shall be anchored in place until surrounds are grouted.

C. Coordinate and provide water stop sealant between the grout patch and sump.

D. Record and submit the manufacturing date of the sump and main drain in compliance with the VGBA.

E. Sumps are provided with pressure relieve valves and underdrain systems but should not be installed; turn over to Owner for future use.

3.2 INSTALLATION OF PIPING

A. Pipe openings shall be closed with caps or plugs during installation. Equipment and pool fittings shall be tightly covered and projected against dirt, water and chemicals or mechanical injury. At the completion of the work, the fittings, materials and equipment shall be thoroughly cleaned and adjusted for proper operation.

B. Handling: Pipe and accessories shall be handled in such a manner as to insure delivery to the trench in sound, undamaged condition.

C. Cutting of Pipe: Shall be done in a neat and workmanlike manner without damage to the pipe. Cutting shall be done by means of mechanical cutter.

D. Placing and Laying: Before installation, pipe shall be inspected for defects. The interior of the pipe shall be thoroughly cleaned of foreign matter and shall be kept clean during layout operation. Pipe shall not be laid in water or when trench or weather conditions are not suitable for the work. Water shall be kept out of the trench until pipe is installed. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substance will enter the pipes or fittings.

E. Solvent Welded Joints: Shall be made in accordance with the manufacturer's recommendations. However, the following directions are considered when applying cement. The outer surface area of pipe and inner wall of fitting shall be clean and dry. Thinner is to be applied to the outer surface of the pipe and to the inner surface of the fitting.
   1. Cement is to be applied to the outer surface of the pipe, or on the male sections of the fittings only. When the outside surface are of the pipe is satisfactorily covered with cement, allow ten seconds open time to elapse before inserting pipe end into fitting. After full insertion of pipe into fitting, turn fitting about the pipe end approximately 1/8 to 1/4 turn. Wipe off excess cement at the joint in a cove bead. Use only approved cement and thinners for making joints.
   2. All joints shall remain completely undisturbed for a minimum of ten minutes from time of joining the pipe and fitting. If necessary to apply pressure to newly made joints, limit to 10% of rated pipe pressure, four hours after joining. Do not exceed this level for the first 24 hours after the joint has been made.
   3. Carefully handle all pipe and move as little as possible for 24 hours after joining.
   4. Protect plastic pipe from exposure to aromatic hydrocarbons, halogenated hydrocarbons, esters and ketones that attack the material. Protect pipe from mechanical damage and long exposure to sunlight during storage.

F. Testing: After piping is laid, the joints completed and the trench partially backfilled, leaving joints exposed for examination, the newly laid line shall be subjected to a hydrostatic pressure for a period of two hours.
   1. A water test shall be applied to a gravity drain piping systems, either in their entirety or in sections. All openings shall be tightly plugged and each system filled with water and tested with at least a 10 foot head of water. The water shall be kept in the system, or in the portion under test for at least 15 minutes before the inspection starts. The system shall then be proved tight at all joints.

3.3 SERVICING EXISTING PUMP

A. It is the intent of the project to service and use the existing self-priming pool pump. Contractor shall perform the following:
   1. Disconnect from power supply
   2. Disconnect suction and discharge lines; open drain connections/plug
   3. Flush and clean pump
   4. Remove strainer basket; clean basket and strainer assembly
   5. Lubricate the pump motor
   6. Loosen the volute cap screws
   7. Remove seals if used
   8. Remove pump assembly.
   9. Remove fasteners, capscrews, washers to remove the impeller.
   10. Clean all parts, use solvent and appropriate cleaning products
   11. Replace gaskets and O-rings

12. Inspect seats to ensure they are smooth and free of physical defects
13. Thoroughly clean the shaft and sleeve
14. Reassemble the pump.
15. Reconnect the piping; check connections of suction and discharge lines
16. Reconnect power
17. Start pump and inspect for leaks

3.4 INSTALLING ACCESSIBLE RAILS

A. Field verify floor slope of pool.
   1. It is the intent of this Project reuse the rails in the future pool project.

B. Install in strict accordance with the manufacturer's recommendations, anchoring firmly into position.

C. Verify that each item is properly installed and properly operating. Make required adjustments to achieve optimum operation.

D. Bond all metal components according to the National Electric Code (NEC) and as specified in Section 260000.

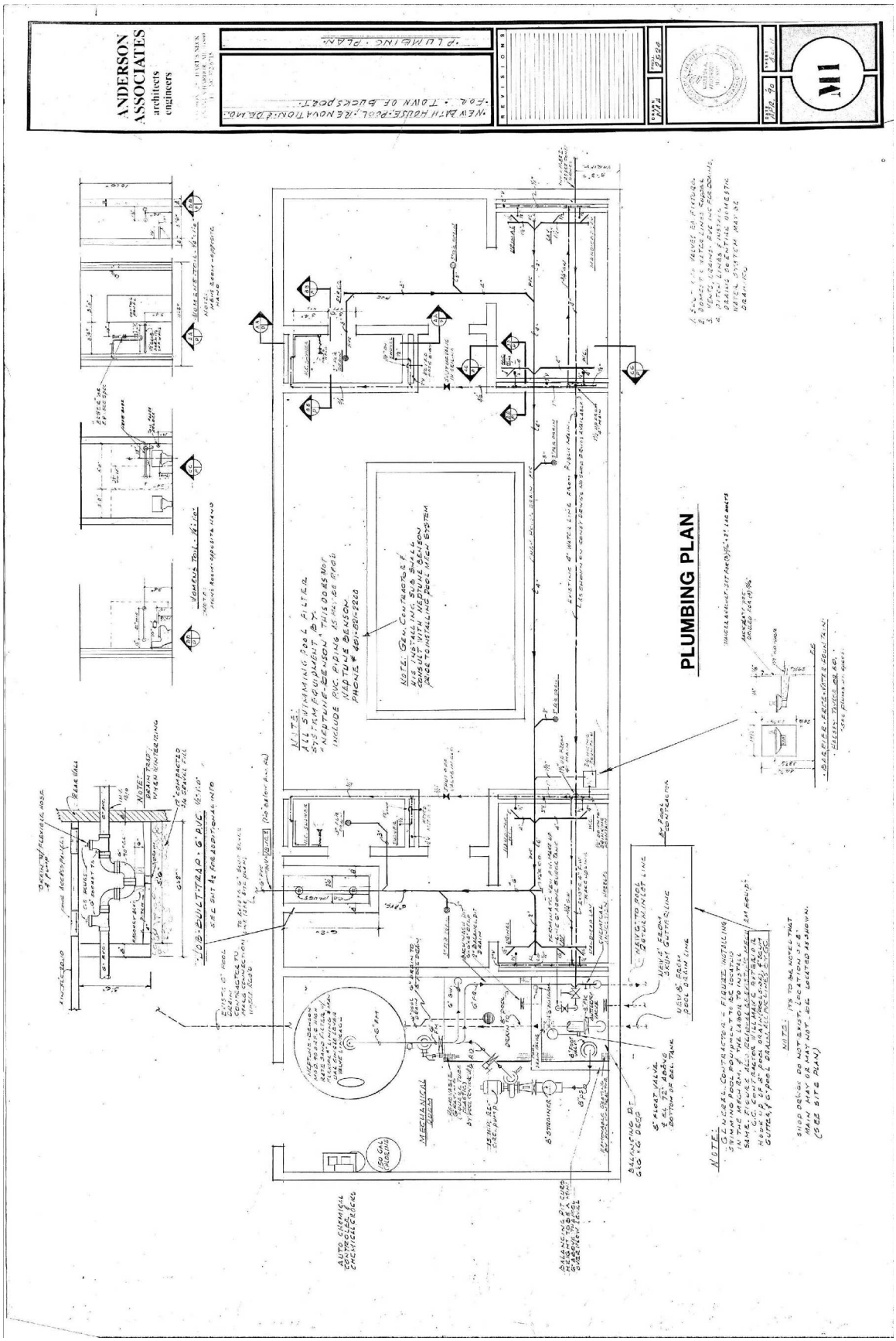
3.5 STARTUP AND ENGINEERING SERVICES

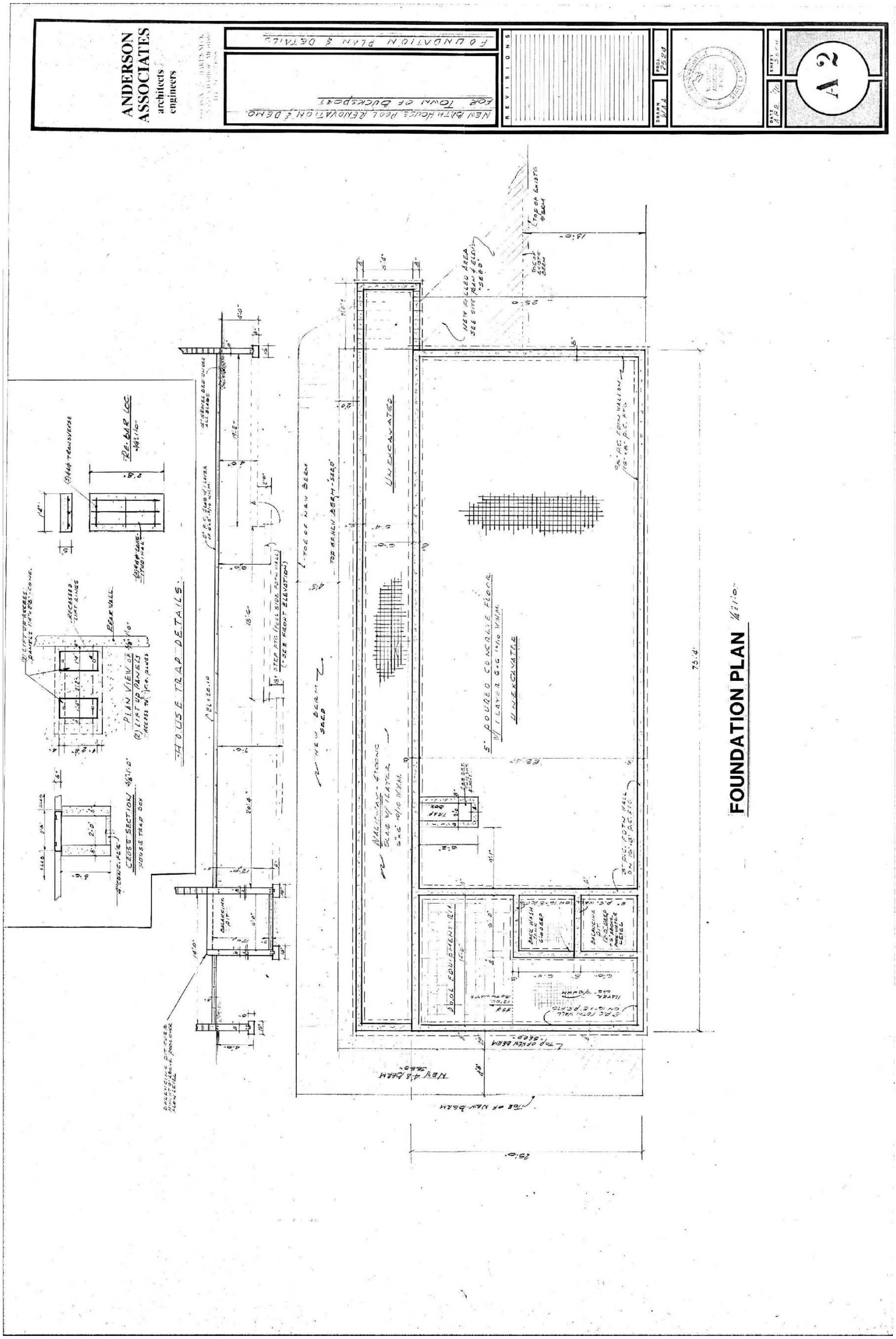
A. It is the intent of the Project to assist the Owner’s pool operator perform start-up operation of the pool.

3.6 1990 POOL DRAWINGS

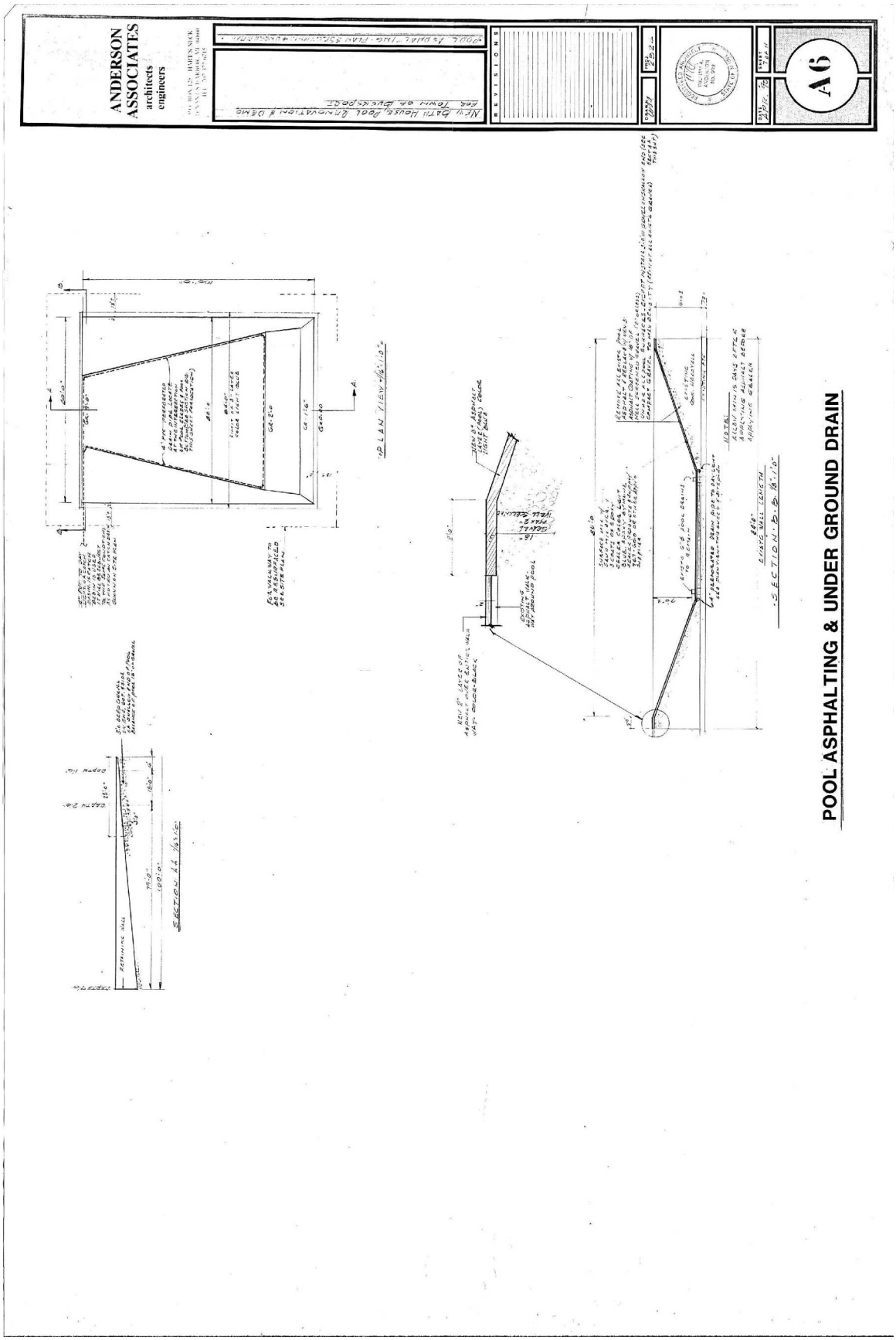
A. The following drawings were part of the 1990 pool renovation and being provided for reference. These are not as-built drawings but generally reflect the work that is visible at the site.

B.

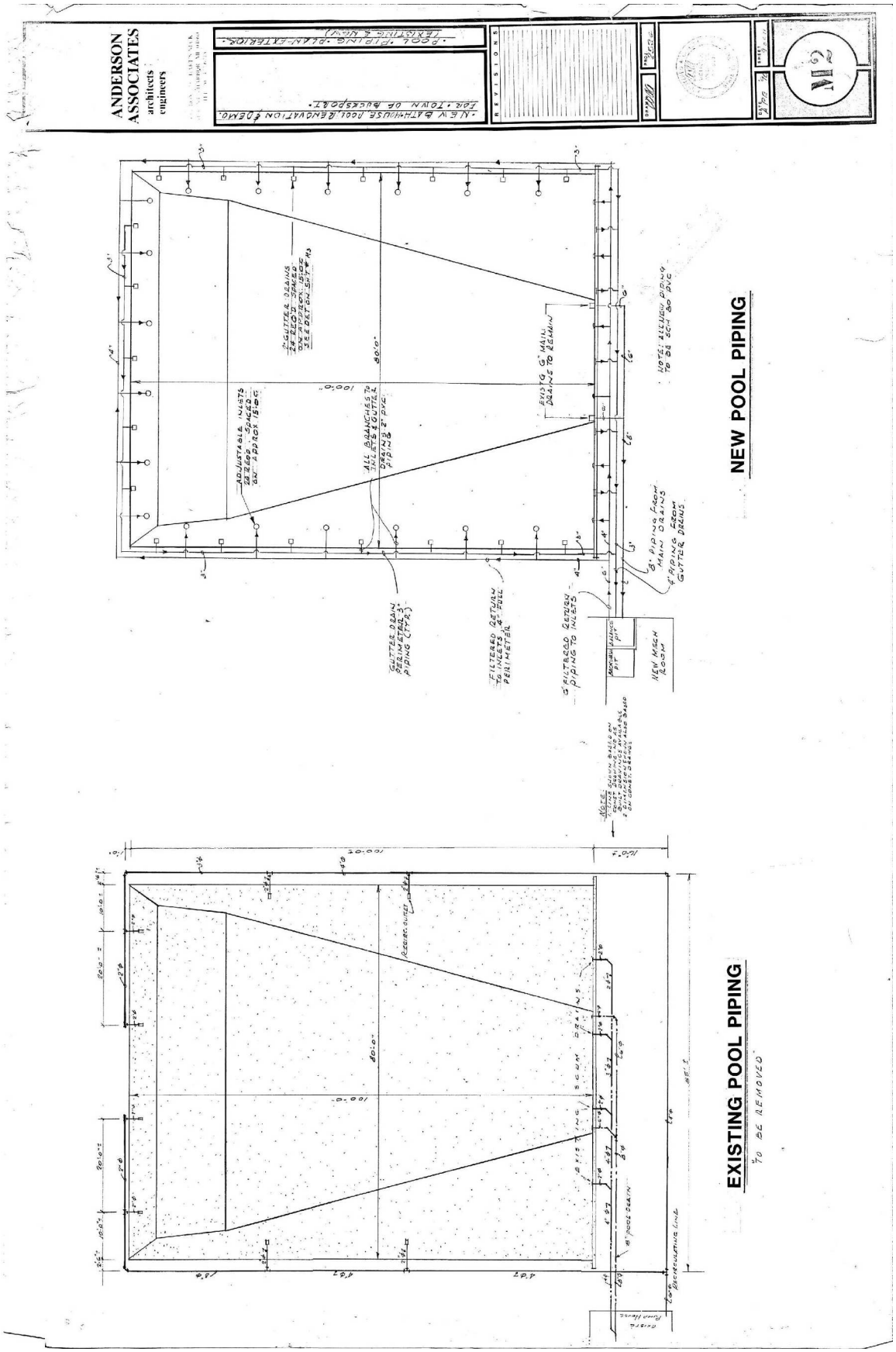

ANDERSON ASSOCIATES
architects
engineers
M1
PLUMBING PLAN


ANDERSON
ASSOCIATES
architects
engineers
A 2
HOUSE TRAP DETAILS
FOUNDATION PLAN

C.

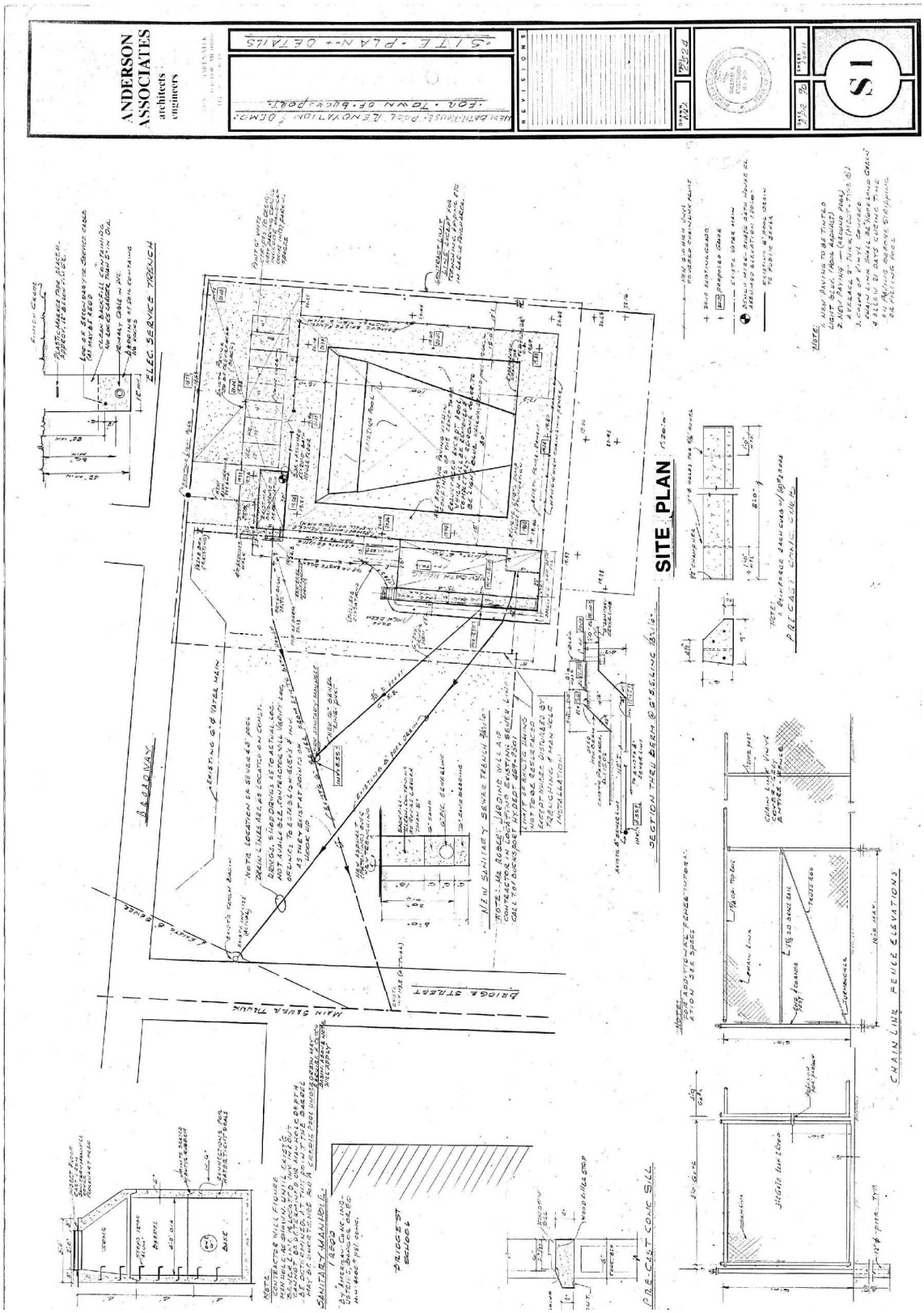

ANDERSON ASSOCIATES
architects
engineers
REVISIONS
A6
PLAN VIEW
SECTION
POOL ASPHALTING & UNDER GROUND DRAIN

D.


ANDERSON ASSOCIATES
architects
engineers
NEW BATHHOUSE POOL RENOVATION & DEMO.
FOR: TOWN OF BUCKSPORT.
POOL PIPING PLAN-EXTERIOR.
EXISTING & NEW.
REVISIONS
M2
NEW POOL PIPING
EXISTING POOL PIPING
TO BE REMOVED

E.

F.



END OF SECTION 131500

SECTION 26 00 00 – ELECTRICAL POOL BONDING

PART 1 - GENERAL

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This work is to include but not limited to the following: furnish and install common pool bonding grid, wire and bonding to swimming pool accessible rails.

1.3 REFERENCES

A. All work shall conform to the NFPA National Electrical Code and all Federal, State and Local Codes and Utility Company Regulations as applicable.

B. NEC *Article 680 Swimming Pools, Fountains, and Similar Installations* applies to this work.

C. All products shall be UL listed.

1.4 QUALITY ASSURANCE

A. The proper installation and operation of equipment and systems shall be demonstrated to the satisfaction and requirements of the Architect.

1.5 SUBMITTALS

A. Supply catalog cuts or prints clearly describing units selected.

PART 2 - PRODUCTS

2.1 POOL BONDING

A. Aluminum conductors shall not be used.

B. Single conductors in conduits shall be copper with THWN or XHHW insulation.

C. Splices:
   1. Where splices are required, provide using one of the two following methods:
   2. Compression connectors of approved pattern
   3. Exothermic welded connections.
   4. Provide approved manufacturers water tight splice kits to insulate all splices.

D. EXECUTION

2.2 POOL BONDING

A. IMPORTANT NOTE: Coordinate for connection of all pool rebar and equipment bonds before concrete is applied.

B. Coordinate installation of pool grounding at beginning of project. Electrician must be present to perform his work before concrete is applied.

C. INSTALLATION, POOL BOND SYSTEM
1. Furnish and install any Code required ground rods.
2. Contractor to provide #8 CU bond for pool stanchions as prescribed in NEC article 680.26.
3. Provide and install 600 volt insulated bonding conductors throughout the bonding system with connection to each item of pool equipment, platform, ladder well, etc.
4. Bonding conductors shall be continuous. where possible.
5. Insulate any splices with approved insulation kit and makeup water tight to protect from corrosion and maintain the integrity of the splice.

END OF SECTION 26 00 00

SECTION 312300 - EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work of the Section consists of all earthwork and related items as indicated on the Drawings and/or as specified herein including, but is not necessarily limited to, the following:
   1. General excavation for work indicated.
   2. Trench excavation for work indicated.
   3. Providing, placing and compacting fill materials.
   4. Drainage and dewatering for work indicated.
   5. Rough grading.

B. Related Requirements:
   1. Section 131500-General Requirements for Swimming Pool for coordination with pool piping installation.

1.3 PERMITS, CODES, AND SAFETY REQUIREMENTS

A. Comply with all rules, regulations, laws and ordinances of the Town of Bucksport , the State pf Maine and all other authorities having jurisdiction over the Project Site. The Contractor shall provide all labor, materials, equipment and services necessary to make the work comply with these requirements without additional cost to the Owner.

B. Comply with the provisions of the Manual for Accident Prevention in Construction of the Associated General Contractors of America, Inc., and the requirements of the Occupational Safety and Health Administration, United States Department of Labor.

C. Contact Dig-Safe at 811 prior to start of excavation work.

1.4 PROTECTION OF EXISTING CONDITIONS

A. The Contractor shall observe all rules and regulations governing the respective utilities in executing work under this Section. All work shall be executed in such a manner as to prevent any damage to existing buildings, streets, curbs, paving, service utility lines, structures and adjoining property.

B. Locate and mark underground utilities to remain in service before beginning the work. Protect all existing utilities to remain in service during operations. Do not interrupt existing utilities except when authorized in writing by authorities having jurisdiction.

C. When an active utility line is exposed during construction its location and elevation shall be plotted on the Record Drawings by the Contractor and both the Architect and the Utility Owner notified in writing.

D. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged, capped or filled. The location of such utilities shall be noted on Record Drawings and reported in writing to the Owner.

E. Provide barricades, fences, lights, signs, and all other safety devices required for the protection of the public.

F. In case of any damage or injury caused in the performance of work the Contractor shall, at his own expense make good such damage or injury to the satisfaction of, and without cost to, the Owner. Existing streets, sidewalks and curbs damaged during the project work shall be repaired or replaced to their condition prior to commencement of earthwork operations.

1.5 RECORD DRAWINGS

A. See SECTION 017839- Project Record Documents for provisions relative to record drawings.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Fill materials shall conform to the following material descriptions. Gradation requirements shall be determined by ASTM D422 unless specified otherwise.

B. All material shall be well graded between the gradation limits shown.

C. Material termed “recycled”, “reprocessed”, or the like containing ground building debris, bituminous pavement or other similar non-soil materials or material coming from sources other than natural sand or gravel borrow pits free of hazardous residue shall not be used on this project without approval by the Architect.

D. On-site material for use in compacted fill shall meet the requirements specified herein for the intended material.

E. Processed Gravel: Shall consist of inert material that is hard, durable stone and course sand, free of loam and clay, surface coatings and other deleterious material. Approved source of bank run gravel my mechanical process meeting the requirements of M1.03.1.

U.S. Sieve No.	Percent Finer by Weight
3"	100
1/2"	70-100
¼ inch	50-85

No. 04	30-60
No. 200	0-10

F. Gravel borrow shall consist of inert natural non-recycled material that is hard, durable stone, gravel and coarse sand, free from loam and clay, surface coatings, and deleterious materials. The material shall be well graded between the following limits:

U.S. Sieve No.	Percent Finer by Weight
3"	100
1/2"	50-85
No. 4	40-75
No. 10	30-60
No. 40	10-35
No. 100	5-20
No. 200	2-10
The amount passing the No. 100 sieve shall be between 40% and 70% of that amount passing the No. 40 sieve	

G. Dense graded crushed stone shall consist of angular material derived from a stone quarry that is hard, durable and free of deleterious materials. Material shall be free from clay, loam or other plastic material. Gradation shall conform to MHD Specification Designation, M2.01.7, and the following:

U.S. Sieve No.	Percent Finer by Weight
2"	100
1-1/2"	70-100
3/4"	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

A. Granular fill shall consist of inert natural non-recycled material that is hard, durable stone, gravel and coarse sand, free from loam and clay, surface coatings, and deleterious materials. The material shall be well graded between the following limits:

U.S. Sieve No.	Percent Finer by Weight
2/3 loose lift thick-ness	100
10	30-95
40	10-70
200	0-15

H. Crushed stone shall consist of inert angular material derived from a stone quarry that is hard, durable, washed stone, free of deleterious materials. Gradation shall conform to MHD Specification Designation, M2.01.2 (1 ½ inch) , M2.01.4 (¾ inch), and the following:

U.S. Sieve No.	M2.01.4 Percent Finer by Weight	M2.01.2 Percent Finer by Weight
2”		100
1.5”		95-100
1"	100	35-70
3/4"	90-100	0-25
1/2"	10-50	
3/8"	0-20	
No. 4	0-5	

I. Ordinary borrow shall be well graded, natural inorganic soil, meeting the following requirements:

1. It shall be free of organic or other weak or compressible materials, of frozen materials, and stones larger than six inches maximum dimension and not more than 35 percent passing the number 200 sieve.
2. It shall be of such nature and character that it can be placed in embankments and compacted to the specified density in a reasonable length of time.
3. It shall be free from highly plastic clays, from all materials subject to decay, decomposition, or dissolution and from cinders or other materials that will corrode piping or other metal.
4. It shall have a maximum dry density of not less than 110 lbs. per cubic foot.
5. Material from excavation on the site may be used as ordinary borrow if it meets the above requirements and is approved by the Architect.

H. Sand for Pipe Bedding: Material for pipe bedding shall meet the requirements specified in ASTM C144

I. Unsuitable Material: Material containing organic matter, frozen materials, debris, clay, materials subject to decomposition and silts too wet to be stabilized which, in the opinion of the Soils Engineer, do not satisfy the design requirement, shall be unsuitable material.

2.2 USE OF MATERIALS

A. Fill materials listed above shall be utilized as follows and as otherwise indicated on the Drawings, specified or directed.

1. Processed Gravel:
   a. Base for concrete pavements and slab.
   b. Sub-base for bituminous concrete road and parking lot pavements.
   c. Backfill at foundation walls and pool perimeters.
2. Dense Graded Crushed Stone:
   a. Base for bituminous concrete pavement where indicated.
3. Granular Fill:
   a. All fill within the structure and as backfill adjacent to walls not specifically designated as Gravel Borrow or Crushed Stone.

4. Sand for Pipe Bedding:
   a. Bedding and blanket for utility lines or as shown on the drawings.
5. Ordinary Borrow:
   a. For general site fill where other material is not specified.

2.3 EQUIPMENT

A. Compaction equipment shall consist of power-driven vibratory equipment and/or hand-guided mechanical tampers as approved by the Architect and capable of achieving the required degree of compaction in a reasonable length of time.

B. Provide sufficient numbers of equipment units of suitable types to spread, level, and compact fill promptly upon delivery of materials.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Establish and maintain suitable stakes over all areas to be graded as directed, specified or required. Maintain sufficient reference points at all times during construction to properly perform the contract installation.

B. Mucky, soft, loose or spongy soils or other material designated by the Architect shall be considered unsuitable for construction purposes and shall be removed from the site. Material rendered unsuitable by the Contractor's methods of construction shall not be defined as unsuitable soil for payment purposes.

C. The Contractor shall take all required measures to avoid disturbance of the subgrade particularly in consideration of the susceptibility of on-site soils to disturbance in the presence of surface water and groundwater.

D. Any excess excavation that has been carried, through error, beyond specified depths or dimensions shall be backfilled by the Contractor at his own expense with compacted gravel, with concrete, or with other material as directed by the Architect.

E. No excavation shall be deposited or stockpiled at any time so as to endanger portions of new or existing structures, either by direct pressure or indirectly by overloading banks contiguous to the operation. Material, if stockpiled, shall be stored so as not to interfere with the established sequence of the construction. If there is not sufficient area available for stockpiling within the limits of the project, the Contractor will be required to furnish his own area for stockpiling.

F. When the plans require excavation in areas in close proximity to existing buildings, roads, structures and utilities it shall be the responsibility of the Contractor at his expense to use satisfactory means and methods to protect and maintain the stability of such roads, and structures located immediately adjacent to but outside the limits of excavation.

G. All soil bearing surfaces shall be carefully hand-cleaned of all loose soil. The final cut to expose foundation bearing surfaces consisting of soil shall be made utilizing a smooth edged

excavating bucket or a bucket with teeth placed horizontally to prevent disturbance of the bearing surface. Upon completion of excavation to the final footing subgrade, a 3-inch thickness of crushed stone or a lean concrete mud mat shall be placed to protect the bearing surface from disturbance. All disturbed bearing surfaces shall be repaired and recompacted to the specified density.

H. No excavation shall be made below the groundwater level without lowering the groundwater level. The bottom of the excavation must be free of standing water and visible.

3.2 GENERAL EXCAVATION

A. All materials required to be excavated to permit construction of the proposed pool work associated site improvements.

B. Work of cutting and filling shall be scheduled to efficiently use all acceptable excavated materials as directed by the Architect. If necessary, such materials shall be temporarily stockpiled between excavation and filling operations. The Architect shall approve locations for stockpiles.

C. Temporary ditches shall be made as needed to drain off surface water to avoid damage to areas of cut or fill. Such ditches shall be maintained as required for efficient operation, at no additional cost to the Owner.

D. When excavations have reached the required depths, the Architect shall be notified and will make an inspection of the conditions. After inspection, the Contractor will receive approval to proceed if conditions meet design requirements.

E. No excavation will be permitted below a line drawn downwards at 2 horizontal to 1 vertical from the underside of the closest edge of any in-place footing or utility at a higher elevation without providing adequate sheeting and bracing as defined above to prevent all movement of the in-place footing or utility.

F. Removal of existing paving, sidewalk, and curb shall be for the full depth thereof and shall include any base courses. The Contractor shall use power saws or other suitable tools, equipment, and methods for cutting and trimming, that will remove the materials to the neat lines as shown on the Drawings, or as directed by the Architect, with a minimum damage to pavement, sidewalk, and curbs that are to remain. Damage done at these locations shall be repaired and restored by the Contractor at his expense.

G. The ground adjacent to all excavation shall be graded or shall have a bituminous concrete berm to prevent surface water from running into the excavation. Keep excavations free from water. No claims for additional cost will be allowed for pumping and draining required for excavations.

3.3 TRENCH EXCAVATION

A. Excavate as necessary for all drainage pipes, utilities and related structures and appurtenances, and for any other trenching necessary to complete the work.

3.4 SHORING AND SHEETING

A. Shoring and bracing of trenches and other excavations shall be in accordance with all applicable federal, state and local requirements and regulations to provide safe working conditions and protect property. The contractor is solely responsible for jobsite safety.

B. Provide shoring of existing utility lines where exposed in new excavations in accordance with rules and regulations of the local authorities or utility owner, at no additional cost to the Owner.

C. All sheeting, shoring, and bracing involved shall be removed by the Contractor after the completion of the permanent structures, in a manner so as not to disturb or mar the structures. Sheeting may be left in place only by written permission from the Architect, subject to such conditions as the Architect may require. No payment will be made by the Owner for such sheeting and shoring and bracing left in place.

3.5 PROOF-ROLLING

A. All areas to receive fill or support footings shall be proof-rolled prior to placing fill or constructing the footings as indicated below unless otherwise directed by the Architect.

B. Proof-rolling pavement subgrade or areas to receive fill shall be proof-rolled using a suitable heavy vibratory drum compactor making at least 4 passes of the area.

3.6 FILLING, BACKFILLING AND COMPACTION

A. Provide material conforming to these specifications and referenced Standards for all additional required fill at no additional cost to the Owner if sufficient quality or quantity of suitable material is not available on site.

B. Finished grades not otherwise indicated shall be uniform levels or slopes between points where levels are given or between such points and existing finished grades.

C. All areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when materials or material below it are frozen. No fill material containing ice or frozen lumps shall be used.

D. Filling shall be done only after the area to be filled has been observed by the Architect. The Contractor shall notify the Architect when excavation is ready for formal inspection. All areas to receive fill shall be proof-rolled by at least two passes of the compaction equipment to be utilized for controlled placement of compacted fill, or other approved equipment.

E. All fill is to be placed "in the dry" to which end, dewatering may be required. The Contractor shall dewater excavated areas as required to perform the work and in such a manner as to preserve the undisturbed condition of the excavated subgrade.

F. Before filling against walls, the permanent structure must be completed and sufficiently aged to attain strength required to resist fill pressures without damage. Temporary bracing of the permanent structure walls will not be permitted. Correct any damage to structure caused by fill-

ing operations at no cost to the Owner. Place no stones over 4 inches in diameter closer than 18 inches to wall surfaces.

3.7 BACKFILLING OF TRENCHES AND STRUCTURES INCLUDING SWIMMING POOL TANKS

A. All requirements for description, placement, compaction and spreading of fill materials as specified herein shall be applicable to backfilling operations.

B. Backfill materials as specified herein shall be used as bedding and backfill around drainage pipes, around structures and for other uses as illustrated on the Drawings.

C. Do not commence backfilling operations for trenches and structures until all piping, etc., has been installed, tested and approved, and the locations of all pipe and appurtenances have been recorded. Backfill carefully by hand around pipe to depth on one foot above top of pipe using material specified herein, and tamping firmly in layers not exceeding six inches, compacting with hand rammers or mechanical tampers.

D. Backfill materials as specified shall be placed to the full width of the trench as indicated on Drawings. After a pipe is bedded, the trench shall be filled to the centerline of the pipe with fill as specified except at the joint. After the joint is inspected, that portion shall be filled in. Material under and around the pipe shall be carefully and thoroughly compacted to the densities specified herein.

E. From the centerline of the pipe to a point twelve inches above the top of the pipe the backfill shall be placed by hand and compacted with mechanical tampers to not less than 95% of maximum density at optimum moisture content of the material. Above this point, backfill may be placed by machine in layers six inches (6") deep and compacted to the densities specified herein. This backfill shall be extended as shown on the Detail Drawings. Backfill simultaneously all sides of pipe or structure.

3.8 DRAINAGE, DEWATERING AND FROST PROTECTION

A. The Contractor shall control the grading in areas under construction on the site so that the surface of the ground will properly slope to prevent accumulation of water in excavated areas and adjacent properties.

B. Should surface, rain or groundwater be encountered during the operations, the Contractor shall furnish and operate pumps and related equipment, including standby equipment, and all necessary piping to keep all excavations clear of water at all times and shall be responsible for any damage to the subgrade, completed work or adjacent properties from such water. All piping exposed above surface for this use shall be properly covered to allow traffic to pass without obstruction. Dispose of water through temporary pipelines or ditches with outfall to natural drainage courses. Prevent erosion and siltation of surrounding areas.

C. The presence of groundwater in soil will not constitute a condition for which an increase in the Contract price may be made. Under no circumstances place concrete fill, lay piping or install appurtenances in excavations containing free water.

D. The Contractor shall keep the area under this Contract clear and free of accumulation of snow, ice and frozen ground within the Limit of Contract lines as required to carry out the work at no additional cost to the Contract. The Contractor will be solely responsible for preventing frost penetration into the foundation soil below footings and slab for the duration of this Contract.

3.9 ROUGH GRADING

A. Rough grading shall include the shaping, trimming, rolling, and refinishing of all surfaces of the subbase, shoulders, and earth slopes, and the preparation of grades as shown on the Drawings. The grading of shoulders and sloped areas may be done by machine methods. All ruts shall be eliminated. Traffic of men and equipment across soil subgrade areas shall be prohibited following excavation to the required lines and grades.

3.10 DUST CONTROL

A. The Contractor shall employ all possible methods and/or materials to prevent the spread of dust. Chemical materials may not be used on subgrades of areas to be seeded or planted.

3.11 REMOVAL OF SURPLUS AND UNSUITABLE MATERIALS AND CLEANUP

A. Surplus excavated materials not required to complete site construction and unsuitable excavated materials shall, unless directed otherwise by the Architect, become the property of the Contractor who shall remove and legally dispose of such materials from the site at no additional cost to the Owner.

B. At the end of all excavation, filling and grading operations and before acceptance of the work, the Contractor shall remove all debris, rubbish, etc., from the site. He shall dispose of them in a manner satisfactory to the Architect. The premises shall be left clean, presentable, and satisfactory.

3.12 DEFICIENCY OF FILL MATERIAL

A. Provide required additional acceptable fill material from off-site borrow sources to complete the work if a sufficient quantity of suitable material is not available from the required excavation on the project site.

END OF SECTION 312300

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SECTION 32 13 13- CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes exterior cement concrete pavement pool decks with a non-slip, broom finish.

1.3 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer of ready-mixed concrete products who complies with ASTM C 94/C 94M requirements for production facilities and equipment.

B. Qualifications for Workmen
1. Provide at least one person who shall be present at all times during execution of this portion of the Work, shall be thoroughly trained and experienced in placing the types of concrete specified, and shall direct all Work under this Section.
2. For finishing of exposed surfaces of the concrete, use only thoroughly trained and experienced journeymen concrete finishers.

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces. Use flexible or curved forms for curves with a radius 100 feet (30.5 m) or less.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

B. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60 (Grade 420). Cut bars true to length with ends square and free of burrs.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:

2.3 CONCRETE MATERIALS

A. General: All concrete, unless otherwise specifically permitted by the Landscape Architect, shall be transit-mixed in accordance with ASTM C-94. Concrete for flatwork shall be Class D. Concrete for wall and footings shall be Class A.

B. Quality: Cement concrete shall be composed of specified proportions by weight of cement, aggregates, water and additives to form a homogeneous composition. All concrete shall have the following minimum compressive strengths at 28 days and shall be proportioned within the following limits:

Min. psi @ 28 days	4000
Max. size of aggregate	3/4 inch
Min. sacks of cement/CY	5.50
Max. slump in inches	4

C. Concrete shall have a water-cement ratio not exceeding six gallons per sack and shall contain entrained air. Use admixture according to manufacturer's written instructions.

D. Air-Entraining Admixture: ASTM C 260.

E. Cement: All cement shall be Portland cement conforming to ASTM C-150, Type I, and shall be the product of one manufacturer. The temperature of cement delivered to the plant shall not exceed 150 deg. F.

F. Aggregates
1. All aggregates shall conform to ASTM C-33-71, except as modified herein.
2. When used as a fine aggregate for cement concrete, sand shall be composed essentially of clean, hard, strong, durable, and impermeable particles resistant to wear and frost, inert to cement and water, reasonably free from structurally weak grains, organic matter, loam, clay, silt, salts, mica, or other fine materials that my affect bonding of the cement paste. Sand shall be taken from a natural deposit and shall be relatively spherical in shape and

shall have gritty surfaces. The sieve analysis of the sand shall show it to be well graded and conforming to the following table.

Size of Sieve	Percent by Weigh Minimum	Passing Maximum
3/8"	100	---
#4	95	100
#16	55	80
#50	10	25
#100	2	8
#200	0	2

3. Coarse aggregate for cement concrete shall consist of crushed rock or screened gravel and shall be composed essentially of clean, hard, strong, and impermeable particles, resistant to wear and frost, and free from delterious amounts of organic matter, loam, clay, salts, mica, and soft, thin, elongated, laminated or disintegrated stone, and it shall be inert to water and cement.
4. When tested by U.S. Standard laboratory sieves, coarse aggregate for cement concrete shall be blended from stone sizes to meet the gradation requirements for each designation listed of variation for general application and are minimum and maximum in each case.
5. To insure uniformity of material used on any one job or project, the range of variation may be reduced to 1/2 of the master range upon determination of the character and source of the materials that the Contractor proposes to furnish.

Designation	No. C-1		No. C-2		No. C-3	
Nominal Size	1 1/2"		3/4"		3/8"	
Sieve Size	Min.	Max.	Min.	Max.	Min.	Max.
1 1/2 inch	90	100	--	--	--	--
3/4 inch	35	60	90	100	--	--
1/2 inch	--	--	--	--	90	100
3/8 inch	10	25	20	50	30	70
No. 4	0	5	0	10	0	15
No. 8	--	--	0	5	0	5

G. Water: ASTM C 94/C 94M.

2.4 CURING MATERIALS

A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

B. Water: Potable.

2.5 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: Expansion and isolation joints shall be 3/8 inch preformed ethylene vinyl acetate or closed cell polyethylene foam material. Hold joint material down a sufficient distance to allow for the installation of cap.

B. Joint Cap: Plastic expansion joint cap that fits over expansion and isolation-joint filler strips. Top section of cap pulls free to create a smooth consistent joint ready of sealant. Provide W.R. Meadows Sealtight Snap-Cap or approved equal.

C. Expansion Joint Dowels: Smooth dowel shall be hot rolled plain steel dowel bonded at one end and operating in smooth close fitting sleeve (of same material) at the other.

2.6 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Shall not be allowed.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

3.2 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for pavement to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.3 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.4 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
   1. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.

E. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 3/8-inch (10-mm) radius. Eliminate tool marks on concrete surfaces.

F. Edging: Tool edges of pavement and joints in concrete after initial floating with an edging tool to a 3/8-inch (10-mm) radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.5 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

B. When no moisture barrier is used, the earth, concrete, masonry, or other water permeable material against which concrete is placed shall be thoroughly saturated with water immediately before concrete is placed. No concrete shall be placed until the consolidation of the ground and the arrangement of details of forms and reinforcing have been inspected and approved by the Town.

C. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

D. Do not add water to concrete during delivery or at Project site.

E. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

F. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

G. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

H. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.6 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic or as indicated otherwise to provide a uniform, fine-line texture.

3.7 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3.8 DEFECTIVE WORK

A. Inspection: Immediately after forms have been removed, inspect all concrete surfaces and patch all pour joints, voids, rock pockets, and other imperfections before the concrete is thoroughly dry. Do not patch until concrete has been inspected by the Town

3.9 PROTECTION

A. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

B. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

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